CHYLE CYSTS OF THE MESENTERY.*

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THE first accurate description of this disease is found in the report of an autopsy by Rokitansky in 1842. Hahn in 1887 made the first classification of mesenteric cysts, which included those containing chyle as a distinct class.

The mesentery of the small intestine consists of two layers of peritoneum, which separate as they approach the intestine to enclose it and form its peritoneal coat. Between the layers of the mesentery we find fat, lymph vessels with blood vessels accompanying them, and mesenteric glands, varying in number from 150 to 200. The lymphatic vessels which are here called lacteals, on account of the color of the fluid they carry, form by two plexuses in the villi of the small intestine. One plexus lies between the muscular coats, and one beneath the mucous membrane. They anastomose freely and are accompanied by a very complete set of blood vessels, as is beautifully shown in the dissections of Mr. Evans.[39]

The lacteals leave the intestines and extend about 1½ inches to the first series of glands; there they become fewer in number and larger in calibre, and extend to a second series of larger glands situated on the primary arches of the arteries. From these again the efferent vessels of the third set of glands unite to form two or three trunks, or one trunk of large size, the truncus lymphaticus intestinalis. This joins with the right and left truncus lymphaticus lumbalis to form the receptaculum chyli of Pecquet.

These cysts may appear either as dilated lacteals, as collections of chyle between the layers of the mesentery, or as enlargements of the cysterna chyli.

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Most observers find the cause of the trouble in a degenerated lymph gland. The theory being that as the gland becomes obstructed, obliteration of the efferent vessels at the site of the gland takes place, and there being an unhindered flow in the afferent vessels, there must be an accumulation of chyle. Werth [3] and Martin have each found a portion of hypertrophic mesenteric gland on pieces of the cyst wall removed for examination. Martin found a gland in condition of cystic degeneration and was thus able to confirm this theory.

Neither endothelium nor epithelium have ever been found on the inside of the cysts.

It will be seen that the size of these cysts will depend on the location of the lesion along the lacteal tract, and on the limit of expansion of the containing walls.

Several lymphatic glands may degenerate about the same time and form a number of cysts, as is illustrated in the annexed table. The cyst may become displaced by its own weight, so as to form a pedicle, or, it may occupy such a position as to partly occlude the bowel by pressure.

Two cases of this disease have come under my observation:

Case I.—The first patient was a male 32 years old. He had had several attacks of abdominal pain which were referred to the appendix. He had suffered from indigestion and had been careful of his diet for some time. At the time of operation he had been suffering with symptoms of appendicitis for one week. His abdomen was greatly distended. A mass could be felt in the region of the appendix. Strangely enough he did not feel very badly and had walked to Dr. Parrish's office where I saw him. He was sent to the Long Island College Hospital and a gangrenous appendix removed with a quantity of foul pus. The peritoneal coat of the colon was also found gangrenous. After this operation the patient improved somewhat in general condition, but his abdominal distention remained. A fecal fistula formed the third day after operation; but even this did not relieve his distention. His pulse ranged between 120 and 130, and his temperature between 101° and 103.° He vomited occasionally and had distress after taking milk. There had been several unsatisfactory fecal movements with the expulsion of some gas. Expecting to find a pocket of pus, I explored the wound with my finger and felt a tense mass in the direction of the umbilicus, this ruptured easily and unexpectedly, filling the entire wound with a fluid that looked like thin milk and contained many flakes. I had evidently ruptured a chyle cyst. About 4 ounces of this fluid was sponged out and a drain inserted.

A few hours later the distention of the abdomen was much relieved, and there had been free evacuations, both by the natural passage and through the fistula. For several days there was a local point of tenderness over the region of the ruptured cyst and pressure there would produce chyle in the wound. This tenderness passed away in four days but the flow of chyle, in diminishing quantities, persisted for seven days. In this case we had in all probability a lymph gland degenerated as a result of the peritonitis, with an extravasation from one of the lacteal radicals forming a chyle cyst. This cyst pressed on the intestines which were already glued together by peritonitis and added to the partial obstruction. At any rate the rupture of the cyst almost immediately relieved the symptoms of obstruction. The patient gradually made a complete recovery. Of course the cyst may have existed for some time without giving symptoms. I find no case reported in the literature of a chyle cyst complicating appendicitis.

Case II.—An Italian eighteen years old was seized with acute abdominal pain March 24, 1907; he suffered from nausea and vomiting, but as it was on a Sunday night after indulging in overeating, not much attention was paid to him. He recovered and went back to his work after three days. Two days later he had a return of the same symptoms in a more aggravated form. I saw him, through the kindness of Dr. De Yoanna, on the seventh day of his sickness. We then obtained a history of indefinite abdominal distress extending over some months. The patient associated a blow received on the abdomen, with this distress.

When we saw him he was having paroxysms of pain with some nausea. His bowels had been moved only after several enemas, and then in an unsatisfactory manner.

A tumor of the size of a fœtal head could be easily made out, lying between the umbilicus and the pubis. It was freely movable in all directions, but traction downward caused pain.

CHYLE CYSTS OF MESENTERY.

Number	Reporter	Sex	Age	Location	Operation	Origin	Size	Recovered	Died	Remarks
1	Weichselbaum....	M.	80	....	Incision, drainage	Between layers of mesentery	¾ inch diam	1		
2	Winiwarter.......	F.	4 mo.	Near vertebral column	Incision, drainage	....	3 liters	1	....	Probably congenital. Noticed large abdomen since birth. Punctured four times.
3	Werth...........	F.	39	Umbilical region, median line	Extirpation	Mesenteric gland	Child's head	1	....	Noticed tumor for 3 months. Pain after eating.
4	Kuester..........	F.	21	....	Extirpation	Between layers of mesentery	Adult's head	....	1	Septic peritonitis from wounding the bowel.
5	Killian...........	F.	61	Umbilical region	Incision, drainage	Distended ductus thoracicus	Large tumor	1	....	Noticed tumor for four weeks. Tapped twice 4700 c.c. of chyle withdrawn.
6	W..............	M.	31	....	Extirpation	Mesenteric gland	Adult's kidney	1	....	½ liter fluid withdrawn. Had severe pain.
7	Fenominoff	F.	26	....	Extirpation	Mesenteric gland	2 fists	1	....	2 tea-cups of fluid. No pain.
8	Söhlein...........	F.	57	Umbilical region	Incision, drainage	Mesenteric gland	4 fingers broad	1	....	Diarrhœa and pain for 8 weeks.
9	Rasch............	F.	21	Median line mostly to left and toward pubis	Incision, drainage	Between layers mesentery	6 pts.	1	....	Cause stated to be rupture of chyle vessel.
10	Bramann.........	M.	63	Umbilical region. Freely movable	Incision, drainage	Cysterna chyle	Child's head	1	....	7–800 grm. fluid. Pain after eating.
11	Carson...........	M.	42	Umbilical region	Incision, drainage	....	Adult's head	1	....	Wall very thick and hard.
12	Fetherston.......	F.	33	Pubis to 1 inch above umbilicus. Movable	Incision, drainage	Mesenteric gland	Adult's head	1	....	Noticed tumor for 18 mos. Pain severe for 3 mos. 3 pts. fluid.

13	Gusserow.........	F.	25	Umbilical region Movable	Incision, drainage	Between layers of mesentery	Adult's head	1	....	Pain in abdomen and back for 6 mos. 2½ liter fluid.
14	Tuffier...........	M.	48	Umbilical Region to right. Freely movable	Enucleation	Between layers mesentery. Mesenteric gland	Fœtal head	1	....	Tumor had a pedicle. Contained 600 c.c. of chyle.
15	Tuffier...........	F.	12	Below umbilicus	Incision, drainage	Mesenteric gland	....	1	....	Constipation for many years. Abdomen distended. Chr. intes. obstruction. Multiple cysts; 2 large contained chyle. Many small cysts contained chyle.
16	Quinson..........	F.	20	Vertebral column	Incision, drainage	....	....	1	....	2 pts. chyle.
17	Wenning.........	F.	56	Entire abdomen implicated	....	Between layers of mesentery	....	....	1	Entire mesentery was filled with bodies that looked like hard boiled eggs without shells. Had noticed tumor 6 or 8 months. Died of shock.
18	Hover...........	F.	23	Umbilical region to right. Freely movable	Removed	Mesentery	7 in. long 3 in. wide	1	....	Tumor pedunculated. Noticed small mass 8 mos. before operation.
19	Reynier..........	F.	31	....	Artificial anus	Mesentery	Fœtal head	....	1	Cyst pedunculated. Many attacks of peritonitis. Death due to peritonitis.
20	Pagenstecker.....	F.	10	....	Extirpation	Mesentery	Apple	1	....	Tumor noticed 14 days.
21	Syms............	M.	19	Umbilical region and above	Sack removed	Mesentery	14 oz.	1	....	Chyle.
22	Moynihan........	F.	18	Umbilical region and to right	Extirpation	....	....	1	....	Sick 8 days off and on. Pain tenderness, vomiting and constipation.
23	Moynihan........	M.	7	Right side umbilical region	Extirpation	....	2 pts.	....	1	Sick 4 days abdominal pain and complete obstruction. Tumor had pedicle twisting around gut. Died of shock.
24	Eve.............	M.	11 wks	....	Incision, drainage	Mesentery	Tangerine orange	....	1	Had wasted since birth. Diarrhœa and vomiting. Died 6 weeks after in convulsion.

CHYLE CYSTS OF MESENTERY (*Continued*).

Number	Reporter	Sex	Age	Location	Operation	Origin	Size	Recovered	Died	Remarks
25	Eve............	M.	3½	Right lumbar region	Excision of sack. Tumor compressed intestine	Mesentery	32 oz.	....	1	Ac. intestinal obstruction for 4 days. Died of shock.
26	O'Conor..........	M.	41	Between umbilicus and pubis	Part of wall removed. Sac drained	Between layers	Cocoanut	1	....	Many dilated vessels.
27	Bennecke.........	M.	5	....	Extirpation	Mesentery	1 child's head. 1 fist	....	1	2 cysts.
28	Dalziel..........	....	3	....	Extirpation	Mesentery	20 oz.	1	....	Tumor had twisted the intestine.
29	Spaeth..........	F.	39	Med. line umbilicus and pubis	Incision, drainage	Mesentery	2 fists	1	....	Severe pain in abdomen for several months.
30	Beach...........	M.	55	Right side to pubis. Freely movable	Puncture. Incision and drainage	Between mesenteric layers	8 oz.	1	....	Tumor noticed 1 or 2 months. Pain after eating.
31	Anifrejew........	....	26	....	Incision and drainage	Mesentery	400 c.c.	1		
32	Ritter...........	M.	2¼	....	Extirpation	Between mesenteric folds	Child's head	....	1	Abdomen increased in size for 1 year. Child has been weak and rickety.
33	Smoler..........	M.	60	Above umbilicus	Incision, drainage	Mesenteric gland	Child's head	1	....	Tumor noticed for 3 months. Pain after eating.
34	Fawcett..........	F.	3 mo.	Partly in cavity of pelvis	None	Mesentery	2¾ x 1¾ inch	....	1	Child too ill to be operated.
35	Pannas..........	M.	45	Near umbilicus. Freely movable	Punctured	Mesentery	1 liter	1	....	Pain in epigastrium.
36	Pean............	F.	26	Umbilical region	....	Between layers mesentery	10 liters	....	1	Amenorrhœa for 3 years. Died 3d day from peritonitis.

37	St. Thomas Hospital Rep.......	M.	35	Umbilical region, lower abdomen	Evacuated	Between layers of mesentery	30 oz.	1	....	Tumor noticed for 5 mos.
38	Speckert.........	F.	29	Med. line umbilical region and to right. Freely movable	Extirpation	Mesentery	2½ liters	1	....	Pain in epigastrium. Sick 4 mos. Abdomen enlarged. Pain at defecation.
39	Brinsmade........	M.	32	To right of umbilicus	Ruptured, accidentally; drainage	Degenerated mesenteric gland probably	Fœtal head	1	....	Ruptured by finger while exploring wound 4 days after operation for gangrenous appendicitis. Partial intestinal obstruction immediately relieved.
40	Brinsmade........	M.	18	Umbilical region extending toward pubis	Cyst-wall sutured to abdominal wall. Incision, drainage	Mesenteric gland	10 oz.	1	....	Indefinite history of injury. Slight abdominal pain, for three months, after eating. Acute symptoms for 7 days. Omentum adherent to cyst.

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41	Enzmann.........	F.	77	....	....	Thoracic duct	....	....	....	Walls thick and flabby. Died of endocarditis.
42	Rokitansky, ...	M.	53	....	....	Mesenteric gland	....	....	....	Several small, one large cyst.
43	Virchow..........	....	....	....	....	....	....	....	....	Multilocular chyle cysts.
44	Rokitansky.......	M.	36	....	....	....	....	....	....	Chyle cyst.

There was dulness on percussion over the tumor and resonance all around it. The tumor felt tense and apparently fluctuated. The patient's temperature was 100 and his pulse 120. It was evident that he needed surgical assistance and he was sent to St. John's Hospital.

On opening the abdomen over the tumor, we found a large fluctuating cyst with the omentum adherent to its anterior surface for a space of two inches. After freeing this attachment the tumor was easily lifted up into the wound and found to lie between the folds of the mesentery. There were many dilated blood vessels on the surface of the cyst. The tumor had narrowed the calibre of the intestine by flattening it out. After attaching the wall of the cyst to the parietal peritoneum it was incised and drained of about 10 ounces of milky fluid. The inside of the cyst was gently cleaned with gauze sponges and a gauze drain inserted. The wound discharged a very small quantity of chyle during the next three days, then rapidly narrowed down to a sinus. The patient left the hospital on the eleventh day at his own request. He returned to the out-patient department a few times. The sinus gradually closed and he is reported to have been well since that time.

This case is fairly typical of most of the reported cases.

The report on the specimen showed a creamy white or yellowish fluid, alkaline in reaction, with a specific gravity 1018. White corpuscles were present in large numbers. Fat globules were also present in large numbers. There was a large amount of fine granular amorphous material.

I have tabulated forty-four cases, including my own, for reference. There are other cases reported and referred to in the article by Speckert.[38] Seven of these cases are referred to by Carson.[11]

From an examination of this table it will be seen that chyle cysts of the mesentery occur at all ages. Three of the forty cases here reported are probably congenital, and the oldest patient was in his eightieth year. The cysts occurred about equally in males and females.

Two deaths occurred in cases not operated, and one death in a case in which the operative procedure was not noted. One case in which the entire abdomen was implicated, died of shock. Another case died six weeks after operation in convulsions. The remaining thirty-five cases were treated surgically. Incision and drainage were practised in eighteen cases with no deaths. Extirpation was practised in fifteen cases with five deaths; puncture was practised in two cases with no deaths. It will be noticed that several of the histories note increased pain after eating. This is explained by the increased activity of the lymphatic system at that time.

A comparison with the following statistics, published in Tuffier's article, is of interest:

Thèse de Klefstad, 1892, eighteen cases of chyle cyst treated surgically: 7 incision, 7 recovered; 10 extirpation, 8 recovered, 2 died; 1 puncture, 1 died.

Thèse de Deffains, 1894. Cysts of the mesentery treated by:

1. Puncture: 4 sanguineous, 3 recovered, 1 died; 2 serous, 1 recovered, 1 died; 1 hydatid, 1 recovered.

2. Extirpation: 7 chyle, 6 recovered, 1 died; 7 serous, 6 recovered, 1 died; 2 sanguineous, 1 recovered, 1 died; 1 hydatid, 1 recovered; 1 dermoid, 1 recovered.

3. Incision: 5 serous, 5 recovered; 7 chylous, 7 recovered; 2 hydatid, 1 recovered, 1 died; 1 sanguineous, 1 recovered; 1 dermoid, 1 recovered.

In conclusion we may say that chyle cysts of the mesentery are rare but may occur at any age, and may be of almost any size. In diagnosis they are hardly to be differentiated from other fluid tumors of the abdomen. They are freely movable and are found in the umbilical region. They are not true cysts, and no attempt at extirpation should be made. The safest procedure is to suture the mesenteric wall of the tumor to the parietal peritoneum, then incise, evacuate the chyle and drain.

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